

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGEMENTS	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xii
	LIST OF FIGURES	xiv
	LIST OF ABBREVIATIONS	xv
	LIST OF APPENDICES	xvi
 1	 INTRODUCTION	 1
	1.1 Introduction	1
	1.2 Problem Statement	2
	1.3 Research Questions	3
	1.4 Aim and Objectives	4
	1.5 Scope of the Study	4
	1.6 Research Methodology Flow Chart	5

1.7	Expected Findings	7
2	LITERATURE REVIEW	8
2.1	Introduction	8
2.2	Definitions	9
2.2.1	Risk	9
2.2.2	Risk Management	9
2.2.3	Fundamentals of Risk Management	10
2.2.4	Current Trend in Risk Management	
	Researches	12
2.3	Risk Management Process	13
2.3.1	Establish the Context	14
2.3.1.1	Descriptive	15
2.3.1.2	Creative	15
2.3.2	Risk Identification	16
2.3.3	Risk Analysis	17
2.3.4	Risk Evaluation	17
2.3.5	Risk Treatment	18
2.3.6	Monitoring and Review	18
2.3.7	Communication and Consultation	19
2.4	Tools and Techniques for Risk Response Planning	19
2.5	Classification of Risks in Construction	20
2.6	Risk Management Activities as Applied to Project Management	25
2.7	Barriers of Implementation of Risk Management	26
2.8	Risk Identification Models	29
2.9	Current Practices of Implementation of Risk Management in Construction Industry	34
2.9.1	Integrated Risk Management Model	35
2.9.2	Advanced Programmatic Risk Analysis and Management Model (APRAM)	37
2.9.3	An Organizational Learning-Based Model for Risk Management (OL)	39

2.9.4	Alien Eyes' Risk Model	44
2.9.5	Multi-Attribute Group Decision Making Technique (MAGDM)	47
2.9.6	Dynamic Risk Management System for Large Project Construction in China	48
3	RESEARCH METHODOLOGY	50
3.1	Introduction	50
3.2	Literature Review	51
3.3	Data Collection	51
3.3.1	Interview	51
3.3.2	Questionnaire	52
3.4	Analysis of Data and Discussion of Results	54
3.4.1	Frequency Analysis and Mean Index	54
3.4.2	Risk Analysis Matrix	57
3.4.3	Single Sample T-test	58
3.5	Validation	59
3.5.1	Document Study	59
3.5.2	Interview	59
4	DATA ANALYSIS AND RESULTS	60
4.1	Introduction	60
4.2	Interview Results and Analysis	64
4.3	Responses to Questionnaire Survey	64
4.3.1	Company Information	65
	4.3.1.1 Respondents' Job Position	65
	4.3.1.2 Respondents' Experience in Construction Projects	66
	4.3.1.3 Types of Projects	67
	4.3.1.4 Involvement in Risk Management	68
4.3.2	Statistical Analysis on the Classification of Risk Groups	69

4.3.3	Statistical Analysis on the Risk Factors and the Level of Risks	71
4.3.3.1	Financial Risks	71
4.3.3.2	Technical Risks	74
4.3.3.3	Design and Construction Risks	76
4.3.3.4	Policy and Political Risks	78
4.3.3.5	Weather and Environmental Risks	79
4.3.4	Statistical Analysis on the Barriers of Implementation of Risk Management in the Iranian Construction Projects	81
4.4	Document Study	83
4.4.1	Project Information	84
4.4.1.1	Situation	84
4.4.1.2	Locality-Project Area	85
4.4.2	Risk Categories	86
4.4.3	Summary	89
4.5	Theoretical Risk Management Strategy	91
5	CONCLUSION AND RECOMMENDATION	98
5.1	Introduction	98
5.2	Conclusion	98
5.2.1	Objective (i): To Identify and Classify the Risks in Construction Projects	99
5.2.2	Objective (ii): To Identify the Barriers of Implementation of Risk Management in Construction Projects	99
5.2.3	Objective (iii): To Propose a Theoretical Strategy to Improve the Implementation of Risk Management in Construction Projects	100
5.3	Barriers Encountered While Conducting the Research	101
5.4	Recommendations for Further Researches	102

REFERENCES**104**

Appendices A – B

110-118

LIST OF TABLES

TABLE NO.	TITLE	PAGE
2.1	Recent Conducted Researches on Risk Management	12
2.2	Barriers of Implementation of Risk Management	28
2.3	Risk Identification Techniques	33
2.4	Risk Influence Matrix	46
3.1	Likelihood of Risk Factors	55
3.2	Consequences of Risk Events	56
3.3	Qualitative Risk Analysis Matrix-Level of risk	58
4.1	Summary of Semi-Structured Interview	61
4.2	Statistical Results for the Respondents' Job Position	65
4.3	Statistical Results for the Respondents' Construction Experience	66
4.4	Statistical Results for the Respondents' Type of Projects	67
4.5	Respondents' Involvement in Risk Management	68
4.6	Respondents' Usage of Risk Management Procedure	68
4.7	The Respondents' View on Risk Groups' Likelihood	70
4.8	Differences of the Ratings of the Risk Groups (Single Sample T-Test)	70
4.9	Financial Risks in the Iranian Construction Projects	73
4.10	Technical Risks in the Iranian Construction Projects	75
4.11	Design and Construction Risks in the Iranian Construction Projects	78

4.12	Policy and political Risks in the Iranian Construction Projects	79
4.13	Weather and Environmental Risks in the Iranian Construction Projects	80
4.14	The Respondents' View on Barriers of Implementation of Risk Management in the Iranian Construction Projects	82
4.15	Differences of the Ratings of the barriers (Single Sample T-Test)	83

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
1.1	Research Methodology Flow Chart	6
2.1	The Risk Management Process	15
2.2	Construction Project Three Dimension Risks Transfer Research Model	36
2.3	A System Design of Integrated Risk Management	37
2.4	APRAM Process	38
2.5	Causes, Effects and Controls Relating to Risk Management	41
2.6	Framework for KBDSS	43
2.7	Proposed risk model – Alien Eyes’ Risk Model	46
2.8	Repetitive process of risk identification and assessment simultaneously in projects	47
2.9	Dynamic Risk Management Procedure	49
4.1	Respondents' Job Position distribution	66
4.2	Respondents' Construction Experience	67
4.3	Respondents’ Type of Projects	68
4.4	Proposed Risk Management Strategy	95

LIST OF ABBREVIATIONS

APRAM	-	Advanced programmatic risk analysis and management model
AS/NZS	-	Australian and New Zealand standard
CII	-	Construction industry institute
CQ-SET	-	Cost, quality, safety, environmental and time
KBDSS	-	Knowledge-based decision support system
MAGDM	-	Multi-attribute group decision making technique
NGT	-	Nominal group technique
OB	-	Organizational behavior
OL	-	Organizational learning-based
PERT	-	Project evaluation and review techniques
PMBOK	-	Project management body of knowledge
PMI	-	Project management institute
PRAM	-	Project risk analysis and management
PRBS	-	Potential risk breakdown structure
RAMP	-	Risk analysis and management for projects
TOPE	-	Technical, organizational, project and external
WBS	-	Work breakdown structure

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Interview Survey Form- Semi Structured Interview	110
B	Questionnaire Survey Form- Risk Management Implementation in the Iranian Construction Industry	113